Rel-EYE-ability: The Psychometrics of Pupillometry Across Diagnostic Groupings

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BACKGROUND

Previous research has used pupil dilation to measure cognitive processing in depressed populations. Results have demonstrated that depressed individuals display more sustained processing of negative information than healthy controls.

However, there's limited research examining the test-retest reliability of pupillary responses in depressed populations.

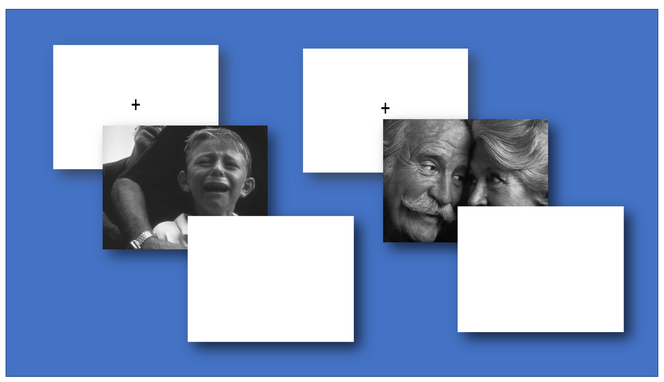
The current project sought to:

- **Test the psychometrics of sustained pupillary responses to emotional stimuli in a sample of depressed, remitted depressed, and healthy controls across a one week interval.**
- **Three metrics were examined: dilation for negative stimuli, negative pupil bias, and positive pupil bias.**

METHODS

Participants

Participants (N=193) ages 18-35, viewed a series of positive, negative, and neutral stimuli taken from the International Affective Picture System (IAPS) at two time points, about one week apart.



Sustained processing of negative images exhibits moderate test-retest and split-half reliability.

There were no significant differences in test-retest reliability by diagnostic status for any of the metrics, suggesting pupil dilation is a reliable psychophysiological measure across clinical status in MDD.

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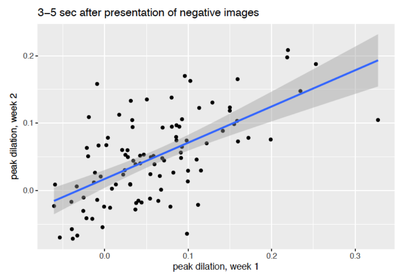
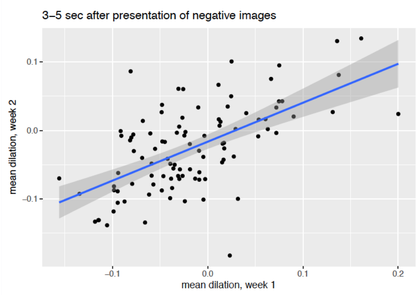
RESULTS

The test-retest reliability of pupillary dilation to negative images was fairly stable over one week across the whole sample for peak (r_s=.52, p < .001) and mean dilation (r_s=.54, p < .001)





The negative bias score had poor test-retest reliability for both peak (r_s=.15, p = .040) and mean dilation (r_s=.14, p = .050), as did the positive bias score for both peak (r_s= -.07, p = .33) and mean dilation (r_s= -.05, p = .517).

Split half reliability was good for peak and mean dilation for negative stimuli. However, split half-reliability was very poor for the negative bias score for mean and peak dilation.

DISCUSSION

The current study indicates that sustained processing of negative images exhibits moderate test-retest and split-half reliability. However, the bias scores demonstrated very poor reliability.

Future directions for research include examining the stability of pupillary responses over a longer period of time.